

REMARKS

Posture of the case

The present application was filed on October 31, 2003. Claims 1-13 were originally presented. An Office action of August 15, 2007 presented a restriction requirement. Applicant traversed the restriction requirement in a response of September 17, 2007. In the same response, Applicant also amended all claims in order to more certainly ensure that the claims were directed to a single invention, to provide sufficient antecedent basis for all terms, and to properly format the claims.

A first Office action of December 12, 2007, rejected claims 1-13 under 35 USC 112, second paragraph, claims 1-13 under 35 USC 101, and claims 1-13 under 35 USC 103(a) as being unpatentable over Computer and Chemistry, 1999, Vol. 23, p. 365-385 ("Taylor"), in view of US 5,832,272 ("Kalantery").

In Reply A of March 11, 2008. Applicant canceled claims 12-13, amended claims, 1, 2, and 3-6 to overcome the 112, second paragraph rejection, amended claim 1 to overcome the 101 rejection, and amended claim 1 and its dependent claims to overcome the 103 rejection.

A final Office action of July 9, 2008, objected to the specification, rejected claims 2-11 under 35 USC 101, and rejected claims 1-11 under 35 USC 103(a) as being unpatentable over Taylor in view of Kalantery, and in view of Proteins: Structure, Function, and Genetics, 1991, Vol. 11, p. 59-76 ("Huysmans").

In an amendment accompanying a Request for Continued Examination of October 8, 2008, Applicant amended the specification to overcome the objection, amended claims 2-11 and traversed to overcome the 101 rejection, canceled claim 1, and added claims 14-23 to overcome the 103(a) rejection.

A nonfinal rejection of February 10, 2009 objected to the specification, rejected claims 3-6, 10, 14-23 under 35 USC 101, and rejected all pending claims under 35 USC 103(a).

In an amendment filed May 11, 2009, Applicant responsive amended the specification, amended independent claim 14, amended dependent claims 4, 5, 6, 15, 17, 19, 21 and 22, and canceled claim 23 to overcome the objections and rejections.

A final rejection of August 4, 2009, withdrew all previous rejections and newly rejected claim 14 under 35 USC 112, first and second paragraphs, newly rejected claims 4, 5 and 14-22 under 35 USC 103(a) as being unpatentable over Taylor et al., Computer and Chemistry, 1999, Vol. 23, p. 365-385 (“Taylor”), in view of Chen et al., Bioinformatics, 2002, Vol. 18, No. 12, p. 1696-1698 (“Chen”), and further in view of Schwartz et al., Genome Research, 2000, Vol. 10, p. 577-586 (“Schwartz”), newly rejected claims 3-6 and 10 under 35 USC 103(a) as being unpatentable over Taylor, in view of Chen, in view of Schwartz, and further in view of Huysmans et al., Proteins: Structure, Function, and Genetics, 1991, Vol. 11, p. 59-76 (“Huysmans”).

In an amendment accompanying a Request for Continued Examination of November 4, 2009, Applicant amended claims 4-6, 10, and 14 to overcome the rejections. In a supplemental amendment of November 19, 2009, Applicant added computer program product and computer system claims previously canceled merely to facilitate expeditious prosecution of the remaining claims.

Interview

Applicant thanks Examiner Whaley for his courtesy and patience in a telephone interview on May 3, 2010. In the interview, the Examiner explained that applications often fail to provide support for negative limitations in claims, which often justifies rejections under 35 USC 112, first paragraph, when such claim limitations are presented. The Examiner also clarified his rejections under 35 USC 112, second paragraph, which helped Applicant understand that part of the cause of the rejection may be due to the use of the language “representing” in the claims.

Present, nonfinal, Office Action of February 2, 2010

The present Office action withdraws the rejection of claims 3-6, 10, 14-22 under 35 U.S.C. 112, second paragraph, in view of applicant's previous amendments.

The present Office rejects claims 3-6, 10, 14-22, 24-28 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, on grounds that

the claims have subject matter not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor had possession of the claimed invention at the time the application was filed. Specifically, the Office action asserts that there is no support for "non-selected replets," as recited in claims 14, 24, 27, and 28.

Applicant respectfully disagrees. See in particular, present application, page 8, lines 1-10 ("Whenever a choice could be represented by one or more replets or one or more combination of replets, a choice is made among them and only one among them is used to represent the subsequence. The other replets also have an entry . . . Since the matching subsequence is removed . . . these entries become invalid . . . updates are performed to make these entries valid . . . the parameters 'k' and '[Greek letter delta]' are adjusted . . . ")

In addition, Applicant's previous remarks pointed out in great detail how the present application provides support for this matter and made it clear that the "selecting" is not about *matching* replets, it is about *what* replets. That is, the issue is selecting what replets to match (and what replets not to match, i.e., non-selected replets). See "choice" of replets (and therefore "use" of the chosen replets) for matching discussed in 11/4/2009 reply, as follows: page 7, line 13 - page 8, line 4 (citing and quoting passages of original application, page 10, lines 1-3, and page 8, lines 8-10). See also discussion in 11/4/2009 reply, on page 12, line 11 - 17 (discussing new replets, which inherently could not have been chosen for matching before, since they are new, i.e., new since other replets were chosen and used for matching).

See also discussion in 11/4/2009 reply, on page 7, line 13 - page 9, line 6 (particularly page 8 of the reply, which cites present application, page 2, line 32 through page 3, line 8; page 4, lines 9-13; page 7, lines 7-13; and page 9, lines 21-25, which describe an investigator selecting a replet to remove repeats of the replet from the overall sequence in order to generate a simplified representation of the sequence).

See also discussion in 11/4/2009 reply, on page 9, line 19 - page 10, line 4 and page 10, line 18 - page 11, line 12.

Nevertheless, merely to cooperatively defer to Examiner and expedite allowance of the present application, Applicant herein amends the claims to avoid reciting negative limitations.

The present Office rejects claims 3-6, 10, 14-22, 24-28 under 35 U.S.C. 112, second paragraph, as being indefinite. Specifically, the Office action asserts that in claim 14, for example, in step vii), regarding "wherein one of the subsequence is matched by a certain plurality of the replets," it is unclear which "subsequence" is referred to, as the claim previously recite both "matched" subsequences (see step iii), and regions of "unmatched" sequences of a backbone sequence that remain after a deletion step (see step vi), which can also be interpreted as subsequences.

Prior to step vii) the claim recites comparing a replet to a sequence to determine matching subsequences (step ii) and refers to "unmatched regions . . . that remain after deleting each matching subsequence" (step vi). Therefore, Applicant respectfully disagrees with the assertion that "the subsequence . . . matched by a certain plurality of the replets" could reasonably be construed as an unmatched region.

Nevertheless, merely to cooperate and expedite allowance, Applicant amends the claims to recite "wherein one of the *matching* subsequence is matched by a certain plurality of the replets."

The Office action asserts that in claim 14, for example, "responsive to" is indefinite. Applicant respectfully disagrees. Nevertheless, merely to cooperate and expedite allowance, Applicant amends language proximate to this phrase, as recited in the claims set out herein above.

Claims 4, 5, 14-22, 24, 27, and 28 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Rigoutsos et al. (Bioinformatics, 1998, Vol. 14, No. 1, p. 55-67), in view of Chen et al. (Bioinformatics, 2002, Vol. 18, No. 12, p. 1696-1698), in view of Orcutt et al. (Nucleic Acids Research, 1982, Vol. 10, No. 1, p. 157-174), in view of Zhang et al. (Genome Research, 1997, Vol. 7, p. 649-656), and in view of UK

CROPNETT (<http://ukcrop.net/agr/sequence display key#sequence>; Published 200 1, p. 1-5).

The Office action relies upon Rigoutsos (i.e. TEIRESIAS) Abstract, p. 56, Tables 2, 4 and 5 and Figure 1 to meet the recited “a sequence identification . . . and offset information to determine a position within the sequence where the matching subsequence of the sequence is located, wherein the offset information comprises a first and second position parameter, the first position parameter denoting a location in the sequence and the second position parameter denoting an offset from the location” in the independent claims 14, 24, and 27. However, while the offset list at the bottom of column 2, page 56, of Rigoutsos teaches a sequence identification and a single parameter for offset information, Rigoutsos does not teach or suggest both a sequence identifier and offset information that “comprises a first and second position parameter,” as claimed. See

Further, MPEP 706.02(j) states that "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references," citing Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). However, the Office action does not even attempt to state how the references teach or suggest this aspect of the claimed invention.

In addition, the Office action relies upon UK CROPNET, pages 2-4, to meet the recited “wherein after receiving the selection the computer system updates the first and second parameters for any non-selected replet associated with the selected one of the replets, the updating being responsive to the position of the selected one of the replets.” However, UK CROPNET teaches that generated displays include an indication of a match to a subsequence inserted into a sequence. See figure on UK CROPNET page 2, “BLASTN homology to an inserted sequence” and see <http://ukcrop.net/agr/insert.html>. But UK CROPNET does not teach or suggest “updating, after receiving a replet

selection, first and second parameters for any non-selected replet associated with the selected one of the replets, as claimed. All the more certainly, UK CROPNET does not teach or suggest such updating that is responsive to a position of the selected one of the replets, as claimed. Further, the Office action does not even attempt to state how the references teach or suggest this aspect of the claimed invention.

For at least these reasons, Applicant respectfully disagrees with the rejection. Nevertheless, merely to cooperate and expedite allowance, Applicant amends the claims as set out herein above to more particularly point out how the invention differs from the prior art and the arguments presented in the Office action. In doing so, however, Applicant respectfully reserves the right to pursue the subject matter encompassed by the claims as presented prior to this reply without loss of claim scope.

For at least the above reasons, Applicant submits that the references cited do not teach or suggest “viii) the computer system generating a first instance of the sequence and presenting the first instance of the sequence to a user of the computer system, wherein the generating of the sequence is responsive to the stored backbone sequence and responsive to the at least one of the stored match-set data entries corresponding to the selected at least first one of the replets, wherein the first position parameter of each match-set data structure entry denotes a location in the sequence and the second position parameter of each match-set data structure entry denotes an offset from the location, wherein the selected at least first one of the replets has a position within the sequence, and wherein after receiving the selection the computer system updates the first and second parameters of the entries in the match-set data structure , the updating being responsive to the position of the selected at least first one of the replets;

ix) the computer system generating or receiving a selection of a second one of the replets; and

x) the computer system generating and presenting a second instance of the sequence to a user responsive to the at least second one of the replets and wherein the

computer system performs the generating of the second instance of the sequence by reference to the updated first and second parameters for the second one of the replets," as now recited in claim 14. Claims 24 and 27 recite similar language and are similarly distinguishable and allowable over the prior art. Claims 3-6, 10, 15-22, 25-26, and 28 are allowable at least because they depend on allowable base claims.

REQUESTED ACTION

Applicant submits that the invention as claimed in accordance with claims submitted herein is patentably distinct, and hereby requests that Examiner grant allowance and prompt passage of the application to issuance.

Respectfully submitted,

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